Mapping exclusion in the organization: Organizational network analysis can reveal ways to bolster inclusivity

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Despite pledging their commitment to gender diversity, annual workforce demographic reports from prominent high-tech companies show that the pattern of underrepresentation of women persists.[1] Compared to other industries, executives and professionals in the tech sector remain disproportionately male.[2] Women account for only 30% of the workforce in the top 75 technology firms in Silicon Valley, even though they achieve near parity at non-technology firms in the region.[3] As a female technical consultant said in a 2018 Pew Research report on women in STEM: "People automatically assume I am the secretary, or in a less technical role because I am female. This makes it difficult for me to build a technical network to get my work done. People will call on my male co-workers, but not call on me."[4]

One of the biggest barriers to women's success is their exclusion from informal professional networks.[5] To identify the challenges and solutions involved in developing gender inclusive networks, we studied the organizational networks of more than 30 companies, surveyed 7,000 employees, and interviewed more than 50 senior executives responsible for implementing their organization's gender-related diversity and inclusion efforts. Our research made clear that *who* you know is as—and often more—important than *what* you know when it comes to rising through the ranks. Networks are how people learn the unwritten rules of success, hear about job and promotion opportunities *before* they are posted, and—most critically—build a level of interpersonal trust and rapport with their contacts that translates into a willingness to pick up the phone and vouch for someone's capabilities. According to one account, nearly 40% of the gender pay gap can be explained by the informal relationships that men have with their male managers.[6]

In this paper, we present the case example of Valitron (a pseudonym), a global computer hardware manufacturer headquartered in Silicon Valley, to illustrate how knowledge of organizational networks impacts the success of efforts to build more gender inclusive organizations in two critical ways: by providing a better measure of inclusion, and fostering actionable insights into precisely where and how to target diversity and inclusion (D&I) efforts.

Valitron approached us because they wanted to assess the effectiveness of recent, significant investments in reducing gender bias in hiring and promotion. We used *organizational network analysis (ONA)*, a methodology that maps informal and formal relationships, to reveal hidden patterns of inclusion and exclusion. And what can be seen, can be changed.

We conducted ONAs on two of their global teams for R&D/engineering and manufacturing, and interviewed team members to add qualitative richness to our quantitative findings. Approximately 30% of survey respondents were female with a corresponding proportion among our interviewees. Although we don't report on this research here, many of our ONA insights also apply to efforts to include people from other marginalized groups, such as people of color, those identifying as LGBTQ+, and military veterans.

Going Beyond Representation

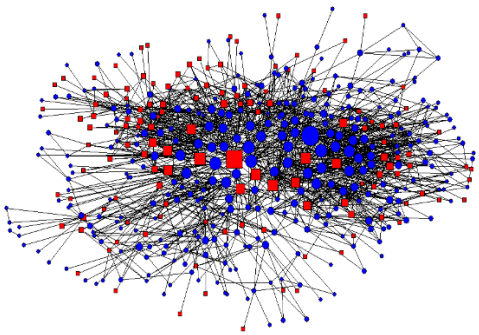
Typical measures of D&I success such as numerical representation and employee engagement surveys ignore a key predictor of career advancement and well-being: *workplace relationships*. The truth is that D&I is not merely a pipeline story—i.e. how many are hired — but instead an engagement strategy — how those who are part of the organization are included in critical

aspects of organizational life. Companies that are truly trying to promote gender inclusion — not just reporting metrics — need to be able to assess and measure the impact of their D&I efforts by seeing how women are embedded in the inner workings of their organizations.

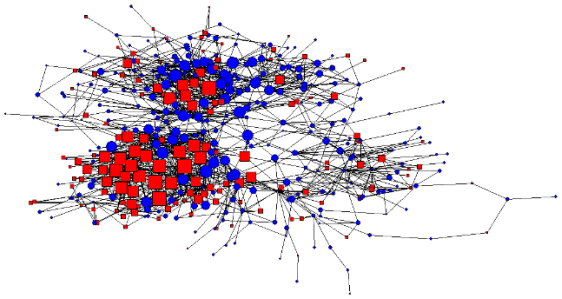
Our earlier research indicated that examining an organization's network can reveal the organization's progress in addressing three common networking challenges for women: *where* they are in the network, *who* is in their network, and the *structure* of their network.

At Valitron, we first explored *where* women were in the network and the extent to which their voices are being heard. Network centrality is an important indicator of influence. Individuals who are central in their organization's networks are more influential than others because their opinions are sought out and listened to by greater numbers of people.[7] When we compared the centrality of women and men, we found dramatic differences. While women in both teams were much more likely to be central in the non-critical decision-making network, they were significantly less likely to be in the center of knowledge, innovation, and critical decision-making networks. Men, not women, were key players in the networks that mattered.

Critical decision-making network



Non-critical decision-making network



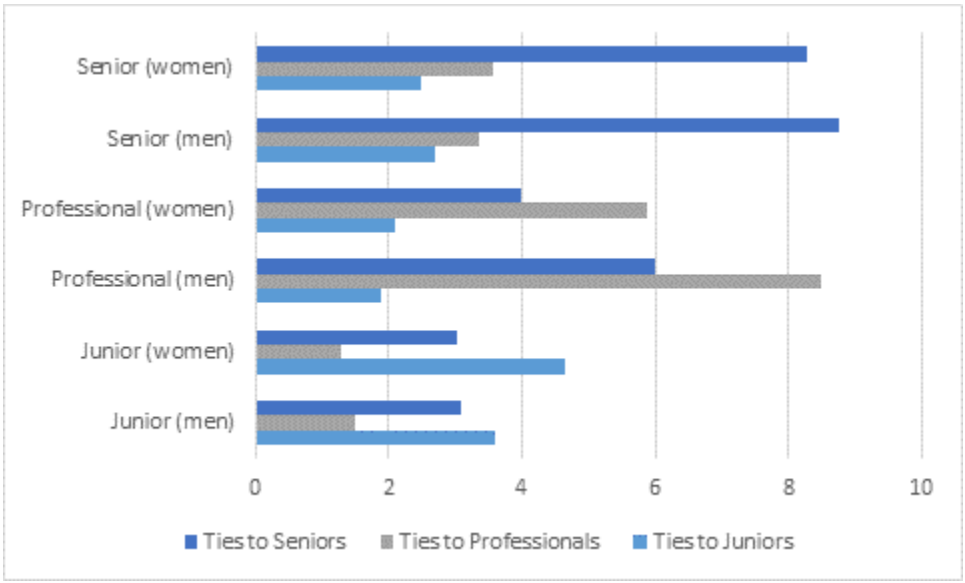
Blue circles = men, Red squares = women

Next, we explored differences between men and women regarding *who* is in their network. Unconscious preferences for same-sex workplace relationships are natural. In fact, preferring to bond with similar others is one of the most robust findings in the social sciences.[8] But when people who are historically under-represented in leadership positions — such as women — try to connect with similar others, they are far less likely to connect with senior executives. Why should women care? Because *who knows you* is as important as who you know.

Most relationships, especially strong relationships, are characterized by some level of trust.[9] Trusted people are more likely to share political information with each other, to persist when communicating something complex or intangible, and to return favors for each other.[10] This might include telling another who is the real decision-maker on a project or team, sharing news

about upcoming job openings, or providing tips on how to best position a project outcome or job candidacy. Having a trusted person vouch for a job candidate's trustworthiness can increase the likelihood of a job offer being extended.[11] Especially for junior employees, having relationships with senior members in the organization can have a major impact on the extent and swiftness of career advancement. Organizations that rely solely on gender representation to assess the success of diversity efforts overlook the importance of these pivotal relationships.

To explore the *who* of men's and women's networks at Valitron, we divided employees into three groups based on level in the organization: junior, professional, and senior. We then compared the average number of connections that men and women had to people who outranked them in the hierarchy. The results were clear. Women at every level — but especially at the professional level — had fewer overall connections to higher-level people than did men. This finding shocked Valitron executives because the company had a robust formal sponsorship program for both men and women and had assumed that the benefits were equally distributed. The ONA revealed that men once again had a significant advantage over women in the informal networks that shape the flow of opportunities and access to power.



Lastly, we took a look at gender differences in relationship structure. For decades, researchers have known that professional networks that are characterized by connections to otherwise unconnected subnetworks within the organization provide important advantages.[12] These network brokers receive new and more diverse information faster than others in the network, and can control the flow of information to advantage both themselves and their organizations. Without brokers providing the connective tissue, networks as a whole wouldn't exist. Remove them and the network falls apart. Not surprisingly, brokers are more likely to be tapped as top talent, be involved in innovation, receive higher performance evaluations, get promoted faster, and earn bigger bonuses.[13]

Here is where engagement surveys fall short when seeking to capture inclusion. Individuals who are not brokers are often cozily embedded in tightly knit clusters with nearby or similar others (e.g., other women in their department). As a result, they might report high levels of engagement,

totally unaware that their disconnect from other parts of the organization is having a negative impact on their career advancement opportunities.

At Valitron, senior managers were much more likely to be brokers than were lower level employees. Given that being a broker is somewhat role-driven, this is not unexpected. What was unexpected was that even after controlling for level in the organization, men were nearly 20% more likely to have networks characterized by brokerage than were women.[a] This was especially true at lower levels in the organization. Organizations that look inward for top talent tend to tap brokers for innovation and promotion opportunities. Our data show that brokers are far more likely to be men. In other words, the structure of their networks once again puts women at a disadvantage.

Throughout our work with Valitron and other organizations, deeper understanding of the network as revealed by the network analysis not only provides a snapshot of current inclusion but allows for a targeted — rather than the more typical scattershot — approach to interventions. These may include:

Creating accountability metrics for developing talent. For example, ONA can reveal the extent to which a formal sponsor is building relationships between protégées and more senior individuals. It can also assess the extent to which individual managers are increasing the gender diversity of their networks and are building teams with gender-diverse networks.

Identifying high-leverage individuals. Network analyses can help locate key opinion leaders to drive and support diversity efforts, and also find marginalized women who might be flight risks, as well as brokers who connect disparate parts of the network.

Codifying and sharing networking strategies of top performers who have built diverse networks. Top performers might include central women who have networks that include senior leaders, managers who have created gender-diverse teams and units, and central men who have gender-diverse networks. Valitron built on study findings to create an enterprise program that captured strategies that high-performing women have used to successful expand their networks and shared them with emerging talent.

Assessing effectiveness of specific diversity investments. For example, ONA can quantify the extent to which unconscious bias training results in more gender diverse and inclusive business units. ERG networks can be examined to see if they are building connections between women and senior leaders.

Developing pull strategies. Women who are peripheral to the network can be connected to more central individuals using "smart mentoring" methods to bring them into the heart of critical networks. Recognizing and valuing the contributions of central individuals who demonstrate inclusionary behaviors can build visibility that pulls women toward them. At Valitron, a Connect Space brings a cohort of carefully selected women together to share their experiences and develop ongoing programming to support their positioning in the organization.

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[a] To measure brokerage, we calculated the *effective size* of each individual's personal network. Effective size captures the extent to which an individual's contacts are connected to each other, either directly or indirectly.

Restructuring work to promote strategic relationship development. ONA can pinpoint high-leverage opportunities for relationship-building, such as gig rotations that place women in areas of the organization where they are particularly sparse (e.g., production). High visibility projects can be designed to connect junior women with senior executives or, as at Valitron, strategic assignments are developed by managers to connect women to influential individuals.

Our research and consulting experience indicates that tech companies fail at gender inclusion because they: (1) ignore the importance of workplace relationships on career advancement and well-being and (2) take a scattershot — versus analytic — approach to interventions designed to foster inclusivity. ONA offers a methodology that sheds light on the invisible nature of inclusion, providing executives with the tools they need to develop more gender inclusive organizations.

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[1] A. Wynn, "Why tech's approach to fixing its gender inequality isn't working," Harvard Business Review Digital Articles (2019): 2–6. https://hbr.org/2019/10/why-techs-approach-to-fixing-its-gender-inequality-isnt-working. K. Rooney and Y. Khorma, "Tech companies say they value diversity, but reports show little change in six years," CNBC (June 12, 2020). https://www.cnbc.com/2020/06/12/six-years-into-diversity-reports-big-tech-has-made-little-progress.html

[2] U.S. Equal Employment Opportunity Commission (EEOC), "Diversity in High Tech," https://www.eeoc.gov/special-report/diversity-high-tech

[3] U.S. EEOC, ibid.

[4] C. Funk and K. Parker, "Women in STEM see more gender disparities at work, especially those in computer jobs, majority-male workplaces," Ch. 3, Women and Men in STEM Often at Odds Over Workplace Equity, Pew Research Center, January 9, 2018. https://www.pewresearch.org/social-trends/2018/01/09/women-in-stem-see-more-gender-disparities-at-work-especially-those-in-computer-jobs-majority-male-workplaces/

[5] H. Ibarra, R. Ely, and D. Kolb, "Women rising: The unseen barriers" (cover story), Harvard Business Review, 9, no. 9 (2013): 60-67; Connections that count: The informal networks of women of color in the United States," Catalyst (2006), accessed https://www.catalyst.org; and Women and men in U.S. corporate leadership: Same workplace, different realities?," Catalyst (2004) accessed https://www.catalyst.org.

[6] Z. Cullen and R. Perez-Truglia, "The old boy's club: Schmoozing and the gender gap," NBER Working Paper N. 26530 (2020).National Bureau of Economic Research. https://www.nber.org/papers/w26530

[7] D. Brass, "Being in the right place: A structural analysis of individual influence in an organization," Administrative Science Quarterly 12, no. 1 (1984): 518-539.

[8] M. McPherson, L. Smith-Lovin, and J.M. Cook "Birds of a feather: Homophily in social networks," Annual Review of Sociology, 27 (2020): 415–444.

[9] R.S. Burt, "The network structure of social capital," Research in Organizational Behavior, 22 (2000): 345–423.

[10] R. Cross and A. Parker, "The hidden power of social networks: Understanding how work really gets done in organizations," (Boston, MA Harvard Business School Press, 2004).

[11] H. Ibarra, N.M. Carter, and C. Silva, "Why men still get more promotions than women," Harvard Business Review, 88 no. 9 (2010): 80–85.

[12] Burt, ibid.

[13] Burt, ibid.